CLAIMS

Having thus described the invention, what we desire to claim and secure by letters patent is:

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An electrical current carrying conductor for long distance transmission of electrical current, said current carrying conductor comprising:

a) a central load carrying core formed of a fiber containing reinforced composite material; and

b) an outer highly conductive electrical current carrying sheath completely surrounding said load carrying core.

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The electrical current carrying conductor of Claim 1 further characterized in that said outer sheath is comprised of aluminum.

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The electrical current carrying conductor of Claim 1 further characterized in that said reinforced composite material is comprised of a plurality of aligned reinforcing fibers embedded in a thermoplastic composite matrix.

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The electrical current carrying conductor of Claim 1 further characterized in that said central load carrying core is comprised of a plurality of individual sections which are capable of being separated from one another for purposes of splicing.

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The electrical current carrying conductor of Claim 4 further characterized in that said individual sections are concentrically arranged to form a cylindrically shaped conductor.

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The electrical current carrying conductor of Claim 5 further characterized in that said individual sections are somewhat trapezoidal shaped and form a central bore sized to receive a fiber optic cable.

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A method for producing a long distance transmission current carrying conductor, said method comprising:

a) bringing a plurality of individual reinforced plastic composite sections together to form a generally cylindrically shaped conductor core; and

b) locating on an outer cylindrically shaped surface of said core an outer highly conductive electrical current carrying conductor.

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The method for producing a long distance transmission current carrying conductor of Claim 7 further characterized in that said step of locating the current carrying conductor comprises winding strands of a highly conductive current carrying conductor about said central core.

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The method for producing a long distance transmission current carrying conductor of Claim 8 further characterized in that said method comprises helically winding said stands about said central core.

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The method for producing a long distance transmission current carrying conductor of Claim 7 further characterized in that said outer sheath is comprised of aluminum.

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The method for producing a long distance transmission current carrying conductor of Claim 7 further characterized in that said reinforced composite material is comprised of a plurality of aligned reinforcing fibers embedded in a thermoplastic composite matrix.

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The method for producing a long distance transmission current carrying conductor of Claim 7 further characterized in that said method comprises the bringing of the composite section together about a fiber optic cable so that the current carrying conductor also includes a fiber optic cable.

A method for splicing ends of first and second current carrying cables comprised of a fiber containing reinforced plastic composite core and an outer highly conductive current carrying sheath, said method comprising:

a) cutting the ends of individual sections of the first cable to be spliced at staggered lengths relative to one another so that each section of the central core of that cable has a length different from the length of any other section of that first cable;

b) cutting the ends of individual sections of the second cable to be spliced at staggered lengths relative to one another so that each section of the central core of that second cable has a length different from the length of any other section of that second cable;

c) matching the ends of the first cable sections with corresponding ends of the second cable so that the ends of the first cable sections will abut against corresponding ends of the second cable sections when all of the individual sections are abutted;

d) heating spliced ends of the individual cable sections as abutted to cause a resin impregnated in the cables to partially liquefy and effectively flow around corresponding ends; and

e) allowing the resin to cool thereby permanently bonding the core sections of the first cable to the core sections of the second cable.

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The method of splicing cables of Claim 13 further characterized in that said method comprises matching the shortest length of a cable section of the first cable with the longest length cable section of the second cable and correspondingly matching the longest length section of the first cable with the correspondingly shortest length section of the second cable.

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The method of splicing cables of Claim 13 further characterized in that said method comprises securing the ends of an electrically conductive current carrying sheath on said first and second cables together in order to permit electrical conductivity through the sheaths of said cables.

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The method of splicing cables of Claim 13 further characterized in that said method also comprises splicing the ends of fiber optic cables carried in the core of each of the individual first and second cables.

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The method of splicing cables of Claim 13 further characterized in that the central core of each of the first and second cables is comprised of a plurality of aligned reinforcing fibers embedded in a thermoplastic composite matrix.

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The method of splicing cables of Claim 13 further characterized in that said individual sections of the first and second cables are spliced together in such manner as to form a cylindrically shaped cable.